

CLAIMS

What is Claimed:

1. A computer method comprising the steps of:
 - i) providing pressure and acceleration sensors;
 - 5 ii) mounting said sensors in a knee-enclosing device;
 - iii) transmitting the data produced by said sensors during actual operation of said knee-enclosing device worn by a specific individual;
 - iv) receiving said sensor signals for subsequent analysis by a computer;
 - v) creating a stress-and-acceleration map based on said sensor-based data;
 - 10 vi) creating a virtual orthodic (model) for support and comfort based on step v) stress-and-acceleration map;
- and
- 15 vii) constructing a physical orthodic based on a design provided by the virtual orthodic.

2. A method according to claim 1, comprising a step of using temperature, moisture, and skin conductivity sensors which are correlated with a worn orthodic.

3. A method according to claim 1, comprising a step of using interpolation techniques to completely map stresses and accelerations experienced by a knee over a period of time.

4. A method according to claim 3, comprising a step of updating the virtual orthodic model using the interpolating map.

5. A method according to claim 4, comprising a step of using the interpolated map to directly design the virtual orthodic in an optimal manner.

6. A method according to claim 1, comprising a step of using non-linear techniques to model an optimal orthodic.

7. A method according to claim 6, comprising a step of employing neural networks as the modeling technique.

8. A method according to claim 7, comprising a step of employing regression as the modeling technique.

9. A method according to claim 7, comprising a step of employing expert systems or fuzzy logic as the modeling technique.

5 10. A method according to claim 1, comprising the step of optimizing the design of the virtual orthodic subject to internal or external constraints.

11. A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for providing an interactive supply chain management database, the method
10 comprising the steps of:

- i) providing pressure and acceleration sensors;
- ii) mounting said sensors in a knee-enclosing device;
- iii) transmitting the data produced by said sensors during actual operation
of said knee-enclosing device worn by a specific individual;
- 15 iv) receiving said sensor signals for subsequent analysis by a computer;

v) creating a stress-and-acceleration map based on said sensor-based data;

vi) creating a virtual orthodic (model) for support and comfort based on step v) stress-and-acceleration map;

5 and

vii) constructing a physical orthodic based on a design provided by the virtual orthodic.